ATGLANT ENGINEERING READINESS

NEWSLETTER 1-99

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Director's Comments

This is our inaugural issue of the ATG N43 Newsletter where we hope to carry on an exchange of technical and operational propulsion information that the former PEB Bulletin provided. The newsletter will center on technical and operational issues that we commonly see on the deckplates, and address common concerns among ship engineers.

R. P. Tjepkema

/S/ 29 NOV 99

Published by the Afloat Training Group Atlantic, Engineering Readiness Directorate as a means to address changes, common problems, and often asked questions from staffs or ships concerning the engineering readiness and certification process. Points of contact for the submission of ideas or articles are: CAPT Doug MacCrea, Managing Editor, and LCDR Rick Lawrence, Editor; both at 757-445-4845.

Director's Comments

This is the first issue since the Type Commanders signed the new 3540.11 and .12 defining the Engineering Qualification Process. We've had about six months to observe ships going through the IA, LTT and UD process during their pre Basic Phase of the IDTC. Most ships are doing well and the feedback from ISICs and ships has been very positive. From our experience, the key to success is full engagement in the process. That means a thorough LOA during your SRA where a complete scrub of your programs, cold checks and MLOC are verified, and Main Space Firefighting capability certified by the ISIC. The next step is the Initial Assessment, normally conducted pierside in LANT and soon after SRA completion. The goal of the IA is to assess the ship's ability to self train, assess material condition with the outcome being a solid set of Training Objectives tailored for that ship. There are no "findings" for an IA, just training objectives. The report for this event only goes to the ISIC and ship. It is intended to be the basis for developing the ship's training strategy. During the post IA period, LTT's using your regional ETG assets can be requested to assist in completing the training objectives. The final part of the process is the Underway Demonstration, which is an event focused on operations. The qualification requirement is that a ship must complete 50 percent of its BECCE's and 65 percent of evolutions satisfactorily. Bear in mind that ATG N43 conducts these assessments on behalf of the ISIC. All reports go to the ISIC---nowhere else. The ISICs make the qualification determination, not ATG. The final element in the process is mentoring. Our engineers are available to mentor ship's engineers on an as needed basis. What a mentor does is based upon what the ship wants him to do. We have assigned officers to ships, as requested by the ship or ISIC, to assist in material assessment, program review and training program development. Additionally the mentor will be the ship's POC for all assessments.

As before, we monitor trends during the process. Material continues to be, for most ships, the single biggest issue that impacts training. Ships that have done a thorough LOA, including development of a detailed MLOC supplement, are generally ahead of their material problems. The best training program will be ineffective if the material condition of the plant doesn't support its implementation. Our second biggest issue is watchstander Level of Knowledge. Deckplate seminars by our assessors show consistently that watchstanders exhibit weaknesses in areas that are covered in their PQS. We often suggest focused seminars and classroom training to improve watchstander proficiency. The last, and arguably the most important, is Damage Control. ATG N43 does not formally look at DC (unless requested by the ISIC or ship to review a Main Space Fire Drill) except during our safety walk through. During our walk through, we consistently find Basic DC equipment improperly maintained or OOC. An example is personal safety equipment such as SEEDS routinely found to be empty while being worn by watch personnel. This is basic safety stuff that should be identified and corrected by every watch supervisor.

Enough for this issue, I sincerely hope you find the bulletin informative and helpful. Please call us with your suggestions for further issues.

THE PROCESS

ITEMS OF PRIORITY

By LCDR Dale Morse

Recent ship visits indicate there is a general misconception about Items of Priority and a misunderstanding about what constitutes an Item of Priority. An Item of Priority is not a reflection upon a ship's ability to resolve a material issue but rather action taken to **help** resolve material problem discovered during assessments for which a ship requires extraordinary technical help, repair assistance, or where a class problem is suspected. These items are often problems that the ship is aware of, but for whatever reason, corrective action has not been completed.

Once an IOP is written it should be corrected or resolved expeditiously by the ship/ISIC/TYCOM team. IOPs are tracked by COMNAVSURFLANT (N-431) and will be reviewed during each subsequent assessment until resolved. CNSLINST 3540.12, paragraph 3102 discusses IOPs in detail.

The ATGLANT Point of Contact is LCDR Jay Keys (Phone: DSN 565-4845) and the SURFLANT Point of Contact for IOPs is Mr. Don Foster (Phone: DSN 836-3295).

TRAINING

CHANGES IN THE PQS AND TRAINING PROGRAMS

By LCDR Jim Minta

Ref: (a) ALLANTFLT 015/99
(b) NAVOP 003/099

The following changes have been made to the PQS Program as a result of Fleet Review Board action promulgated in reference (a).

- Documentation of qualifications is only required in service records.
- Mandatory PQS training, as part of the indoctrination process, is canceled.
- PQS Spotchecks, a master PQS Library and PQS status reports are no longer required.
- CNET is revising the PQS Manager's Guide to serve as a stand-alone document.

Training Program changes announced in reference (b) include:

- Pending additional fleet review, non-GMT is at the discretion of Commanding Officers.
- Separate folders documenting individual training are no longer required.
- Commands shall continue to develop and use long and short range training plans. Weekly, monthly, quarterly, and annual plans specified in the Navy SORM (OPNAVINST 3120.32C) are optional.

The tenets of good, effective PQS and Training Programs remain the same. Schedule training and carry out that schedule.

Over the past several months we have seen an overall decline in the level of knowledge of watchstanders on the deckplates. This leads to questions about the effectiveness of the Engineering Department Training and PQS Programs. How effective are your programs? During drills and evolutions, are your ETT and DCTT questioning watchstanders to determine their level of knowledge of knowledge? How do you review/improve upon weak areas?

A good, effective Engineering Department begins with watchstanders who are knowledgeable about both their equipment and their engineering plant.

MANAGEMENT

ELECTRICAL SAFETY

By LCDR Joe Bell

Ref: (a) CNO WASHINGTON DC 112209ZMAY99
(b) OPNAVINST 5100.19C Change 2 dtd 30 Jul 99

There were significant changes in the Electrical Safety Program announced in reference (a) and formalized in reference (b). These changes are intended to reduce the administrative load for the ship and are summarized as follows:

- Electrical safety checks for personal electric and electronic equipment have been eliminated;
- Mobile electrical equipment is required to be checked only upon initial installation; and
- Portable tool electrical checks only need be done quarterly in accordance with existing NSTM Chapter 300 guidance. Visual inspections are still required prior to issue/use.

These changes affect only the equipment discussed above.

OPNAVINST 5100.19C Change 2 was promulgated with these changes 30 JUL 99. This change is available via download at **www.safetycenter.navy.mil/afloat/download/dlhome.htm.**

HEAT STRESS

By LCDR Joe Bell

Ref: (a) CNO WASHINGTON DC 112209ZMAY99
(b) OPNAVINST 5100.19C Change 2 dtd 30 Jul 99

In reference (a), the CNO updated the fleet on recent workload reductions. Based on advice of the Navy Environmental Health Center (NEHC), the Heat Stress Program has been changed in order to reduce the administrative burden of record keeping and the number of heat stress surveys required to be conducted. The changes include:

- Eliminates the requirement to conduct a heat stress survey at the hottest time of day. (Studies have indicated there is no direct correlation between outside temperature and internal ship conditions affecting heat stress).
- Eliminates the requirement for heat stress surveys before Engineering Casualty Control drills (ECC) unless the drill set will exceed 3 hours.
- Eliminates requirements for follow-on surveys on Nuclear, Gas Turbine, and Diesel powered ships unless there is a dry bulb temperature increase that exceeds 5 degrees during drills.
- Eliminates follow-on surveys for conventionally-powered Steam ships, laundries, sculleries, galleys, and steam catapult spaces unless dry bulb temperature increase exceeds 5 degrees or the wet bulb temperature increase exceeds 3 degrees during the work period.
- Eliminates the requirement for post ECC drill surveys unless temperatures exceed dry bulb triggers addressed above.

Of note, there is no formal definition of what constitutes or is included in an ECC Drill period. With pre-drill surveys no longer required for drill periods less than three hours, commands need to address what they consider constitutes a drill period. Is it just ECC drills or does the drill period include both drill and evolutions? What about Main Space Fire Drills?

There are updated Heat Stress Decision Diagrams available in Appendix B2-E of reference (b) which should help aid in determining if a survey is required or not.

OPNAVINST 5100.19C Change 2 was promulgated with these changes 30 JUL 99. This change is available via download at **www.safetycenter.navy.mil/afloat/download/dlhome.htm .**

LEGAL RECORDS AND OPERATING LOGS

By LCDR Tim Weber

Ref: (a) OPNAVINST 3120.32 (Series)
(b) COMNAVSURFLANTINST/PACINST 3540.22 (Series)
(c) NSTM 079 V3
(d) NSTM 090
(e) Engineering Log Instructions
(f) Engineer's Bell Book Instructions

There have been no changes made to the Legal Records or Operating Logs Programs by the Fleet Review Board to date. References (a) through (f) still apply. As a refresher, key elements of a compliant Operating Logs Program include:

- Equipment logs thoroughly and accurately maintained.
- All logs retained on board as required by applicable references.
- Timely supervisory review of logs with explanation of action taken for out of parameter readings.
- Maximum, minimum, and normal parameters traceable to applicable guidance.
- Forms/records provide adequate information to perform trend analysis.

Representative deficiencies that may make your Operating Logs Program non-compliant include:

- Out-of-parameter readings not identified and addressed.
- Insufficient information to reconstruct significant events.
- Significant number of required logs not on file or maintained for required time periods.

Key elements of a compliant Legal Records Program include:

- All sections completed with sufficient information provided so that significant events within the engineering plant can be reconstructed.
- Engineering Log signed daily by the Engineer Officer and monthly by the Commanding Officer.
- Errors corrected properly.
- Engineering Log and Bell Book retained on board as required by applicable references.

Representative deficiencies that may make your Legal Records Program non-compliant include:

- Insufficient information to reconstruct significant events that occurred in the engineering plant.
- Handwritten logs not kept for periods of automatic data/bell log malfunction.
- Records not maintained on board for required time period.
- Lack of supervisory review.

The above key element and representative deficiency lists are not all inclusive. Daily attention by engineering supervisors will go a long way in maintaining the effectiveness of these programs.

As always, if you have specific questions concerning your logs and records don't hesitate to call our office.

ON-LINE VERIFICATION

By LCDR Dale Morse

During 1998, 22 percent of the LANTFLT On-Line Verification Programs were assessed as not effective (there were no "not effective" assessments in 1997). The factors that contributed to the "not effective" assessments include:

- Lack of supervisory review.
- Failure to fill in required information on the data collection sheets.
- Failure to complete all steps required by the PMS card.

Electronic Boiler Controls are currently being installed on ships. These new controls will eliminate 90 percent of the current On-Line Verification checks and are designed to significantly reduce Boiler Control System failures. The alteration is being accomplished as an AER under the supervision of the Naval Surface Warfare Center, Carderock Division. The Program Manager for the installation is Ken Kiesel (phone (215) 897-1166, DSN 443-1166.)

MANAGEMENT

QUALITY ASSURANCE

By LCDR Jim Talbert

Ref: (a) CLF/CPFINST 4790.3, Vol 5

As directed by the CNO through the IDTC workload reduction initiative, reference (a) has been revised, and Change 3 was issued in November. The revised CD-ROMs will be mailed out and should arrive at your command shortly. If you have not received Change 3 and would like to view this revision, you can do so at **www.submepp.navy.mil** and click on "Products/Services". In order to download the '.pdf' version you will need Adobe Acrobat 4.0.5. The HTML version can be viewed in your browser. You need to install Change 3 once received in CD-ROM form unless CNSL has specifically directed you otherwise.

Change 3 has a significant number of changes to Volume 5, the Quality Maintenance Section. The goal of these changes was to reduce the burden on our sailors, make the manual more user friendly, and save man-hours.

Some of the more significant improvements included:

- Clarified Formal Work Package requirements and use. Repair work documents are now referred to as Maintenance Procedures, FWPs and CWPs. A logic chart is provided to assist you in your determining which work document you need for a specific repair. Simplified explanations of FWP elements and package revision needs have been relaxed.
- QA training has been incorporated into departmental training and provided training topic outlines. Eliminated were the unnecessary lectures, awareness training, annual refresher training and quarterly retention exams. Record retention was reduced.
- Clarified welder / brazer qualification and maintenance of qualification requirements and record keeping. Eliminated welder/brazer proficiency program.
- Provided explicit inspection and acceptance criteria, adequate for all non-nuclear maintenance. Deleted some inspections of level I system maintenance. Single source for mechanical joint repair criteria.
- Eliminated hydrostatic testing for level I systems when certified material is installed. Provided separate tables for surface and submarine testing requirements.
- Removed periodicity for ship's force surveillance. ISIC QA assessment of their ships aligned with IDTC.
- Most FWPs, letters of designation not retained. Electronic and reduced size records can be done immediately. Retention of QA Form 2s not required for existing material.
- Some QA forms clarified.

As always we will keep you updated on any future changes in our newsletters, but another excellent source of engineering information is the CNSL N434 Engineering & Maintenance News Bulletin which is available on the SURFLANT web page: (http://www.spear.navy.mil/n434news/).

ADETA PMS MRC SHOULD BE RETAINED

By LCDR Bill Wood

Ref: (a) CNO WASHINGTON DC 211122ZJUN99
(b) NAVSURFWARCEN SHIPSYSENGSTA PHILADELPHIA PA 191000ZAUG99

In accordance with reference (a), the Automated Diesel Engine Trend Analysis (ADETA) Program is canceled. Fleet units are no longer being monitored for compliance with this program.

Reference (b) advises the fleet to retain and use existing PMS MRCs as an excellent troubleshooting and diagnostic tool.

Note that the MRC will be different for each ship. The MRC for MPDEs is usually 2331 Q-XR and for SSDGs is 3112 Q-XR. The MRCs contain operational procedures for data collection and provide operational parameters for diesel engine operation at 80 to 100% loads, depending on engine application. The MRCs also require ship's force to operate the engine at high power levels, which promotes diesel engine readiness, increases engine reliability and provides training for the operators. These MRCs should not be scheduled but used as situational PMS (R checks).

The Engineering Standing Order with specific plant configuration for the purpose of ADETA required by the EDORM should be updated to delete any reference to scheduling and should state that it is a situational requirement at the discretion of the Engineer or MPA.

Updated PMS is under development to support these changes and revised MRCs will be issued with the next SFR.

REVISIONS TO NSTM 233

By LCDR Bill Wood

During several assessments, questions have been raised concerning the acceptable fuel leakage criteria for diesel engines. NSTM 233 Revision 2 addresses this issue. While small fuel leaks were acceptable using SAFETY as the criteria in article 233.13.48 of Revision 1, article 233-13.13.2 of Revision 2 specifically states:

> "Fuel oil lubricated systems for diesel engines whose fuel oil lubricates external components should be leak free. Leak free does not mean that traces of fuel oil at the injector pump racks will not exist. Fuel traces around shifting lever shafts in fuel oil strainers are acceptable. These trace amounts are normal and are needed for proper lubrication of the fuel racks and strainer shifting levers. These trace amounts do not indicate an unsafe condition. Diesel engines with closed fuel oil systems which do not lubricate external components are not permitted to have fuel oil leakage or weeping."

Diesel engines currently being used by the Navy that have lubricating fuel oil on external components include Colt-Pielstick and ALCOA diesels. Closed fuel systems include Isotta Fraschini, Cummins, Caterpillar, Detroit, Waukesha MTU's and AMD diesels.

MATERIAL/ TECHNICAL

Editor's Note: After a several year hiatus we are again going to write about material/technical issues that affect the fleet. These will include recaps of important messages to you as well as issues that we have observed on the deckplates during assessments that will benefit engineers. If you have an idea or topic for discussion let us know!

GENERAL

MRG SECURITY

By CAPT Doug MacCrea

Recently a surface ship learned the hard way about the potential problems with the Sargent and Greenleaf Model 833 high security lock that is installed on most of our reduction gear inspection covers.

In Service Engineering Advisory (ISEA) 017-99 (NAVSURFWARCEN SHIPSYSENGSTA PHILADELPHIA PA 182020Z OCT 99) was issued to alert all ships to the potential of a chrome hardened steel pin falling out of the Model 833 lock. This pin is an integral part of the lock and can be seen by viewing the key cylinder end of the lock in the locked position. The ISEA described what happened to this ship and provided some additional procedural precautions that should be taken when opening a MRG inspection cover equipped with the Sargent and Greenleaf Model 833 High Security Lock. Specifically:

- Observe the security lock closely during any and all locking/unlocking operations to ensure that the pin does not fall from the lock.
- Physically move the lock away from the inspection cover after opening the lock and prior to opening the inspection cover.
- Thoroughly inspecting around the inspection cover and surrounding area during and after each security lock unlocking/locking operation.

We strongly urge all supervisors to review the ISEA advisory to determine if you have the Sargent and Greenleaf Model 833 High Security lock on your reduction gears and to review the advisory again prior to any opening of the reduction gear inspection covers adhering to the additional precautions provided.

Don't become a victim here. Attention to detail can easily prevent time consuming and very costly repairs to your MRG.

PRESSURE GAGE AND THERMOMETER "RED HANDS" INDICATORS

By LCDR Joe Bell
and
LCDR Jared Keys

Ref: (a) NSTM 504

The following is quoted from reference (a) paragraph 2.17. See reference (a) paragraphs 7-46 through 7-47for more details.

The adjustable "RED HANDS" indicators on gages and thermometers faces should be set at/or slightly above the maximum normal operating value, or at/or slightly below the minimum normal operating pressure/temperature of the system or component to which the gage/thermometer is installed in (see NSTM 505 para 9480 for definitions). Either the maximum or minimum setting, whichever is more appropriate, should be selected.

Where specified maximum or minimum operating values are not available to watchstanders, the RED HANDS should be set at the maximum or minimum operating values to provide the watchstanders with this information.

Where the specified maximum and minimum operating values are readily available to watchstanders (from EOP or preprinted on Operating Logs), RED HAND placement should be slightly beyond the maximum or minimum pressures/temperatures. Specifically, the RED HAND setting should be at some value between the maximum and minimum operating pressure/ temperature (normal conditions) and the gage reading at which an abnormal condition (such as pump cavitation for example) is reached, or at which point an alarm or protective device (i.e. pressure switch or relief valve) is setpoint is reached. The red hand setting should be selected so it is not routinely reached during operation and transients, but that when the setting is reached, prompt operator action can prevent exceeding selected abnormal conditions or protective device settings. Individual red hand settings should be documented and retained onboard.

THREADED FASTENERS

By LCDR Bill Wood

The 1990 tragedy that occurred due to improper use of Black–Oxide Coated Brass Threaded Fasteners in an LPH main steam system that resulted in the loss of ten sailors highlights the seriousness of this topic. Following this mishap, all ships were directed to inspect their steam systems and to replace any Black, Oxide-Coated, Brass –Threaded Fasteners (BOCBTFS). Ships and shore facilities were directed to remove BOCBTFS from stock and dispose of them in 1994. Five years after these efforts to remove these fasteners from our ships, it is still a problem. This year, a routine review by NAVICP found condemned fasteners in the inventory of some ships and BOCBTFS were also found in the hotel steam system aboard a DD and a seawater system aboard an LHA. All ships should re-inspect their storerooms and ready-use supplies and ensure that all BOCBTFS have been removed. **NSTM 075, table 075-3-5 lists the condemned fasteners and the authorized replacements by NSN.**

Improper selection and maintenance of threaded fasteners is a major contributing factor to their premature failure. Failures of threaded fasteners are normally attributed to applying excessive torque or incorrect fastener selection for use in a system.

Excessive torque is attributed to the Fireman's use of the "White-Spot" torque method. This is when maintenance personnel tighten the nut or bolt by pulling on the wrench until he/she sees "white spots" through their eyes. Proper supervision and guidance from supervisors will help alleviate this problem.

As we all know, ferrous fasteners installed in systems and components that are exposed to moisture are subject to rust and corrosion. Although a surface layer of rust or corrosion on a fastener is no cause for alarm, excessive rust or corrosion weakens the fastener, ultimately causing failure, possibly injuring personnel and/ or extensive equipment damage. Unlike corrosion on steel fasteners, uniform surface corrosion on aluminum surfaces, which is prevalent on LCAC's for example, is actually beneficial. The thin gray aluminum oxide film

that is formed from surface exposure to water and salt spray protects the underlying metal from further corrosion. By no means is excessive corrosion of aluminum surfaces acceptable.

Galvanic corrosion is another often-overlooked problem. Any time two different metals are coupled together in a way that permits an electric current to flow between them and both are subjected to or submerged in a fluid that can also conduct electricity, a battery forms and electrons flow through the coupling and fluid. This flow of electrons causes what is known as galvanic corrosion, which attacks the less noble metal or anode. How fast this corrosion progresses depends in part on the voltage difference or "potential" between the two metals and the fluid in which they are submerged. An example of galvanic corrosion is carbon steel coupled to stainless steel. In this case, the carbon steel acts as the sacrificial anode, just as a zinc acts in a sea water system. In this example the nut, bolt and/or washer could be manufactured of dissimilar materials that would lead to galvanic corrosion. Proper fastener replacement guidance can be found in manufacturers technical manual, blue prints or NSTM 075 chapters two and three.

Due to the many different types of fasteners found in non-nuclear steam systems, NAVSEA has prepared a handbook that provides acceptability criteria for continued safe use of fasteners. This handbook was summarized in the JAN-MAR 99 issue of the Ship Safety Bulletin as Appendix A. This criteria is intended to be utilized as a standard for in-service inspections and repairs by the ship, and will be used as authority for fastener inspections in non-nuclear steam systems.

FLANGE SHIELDS

By LCDR Joe Bell
And
LCDR Jared Keys

Ref: (a) NSTM 505 –7.9.4

On many assessments we find lube/fuel oil soaked or improperly installed flange (spray) shields. Ships "resolve" the discrepancy by replacing the material – a "quick" fix. The condition which caused the original problem is usually not identified and, unfortunately, not resolved by the ship, but rather merely masked by replacing the flange shield. Ships can avoid these potential issues by simply inspecting flange shields quarterly. Reference (a) states that flange/spray shields should be checked to ensure that they are tightly secured and that they are not damaged to the point where they are unable to contain oil spray. If an oil soaked flange shield is found, that is the time to investigate and resolve the real material problem to ensure future safe operations.

Determining if a flange/spray shield is either oil-soaked or has oil pooled within it can be accomplished by squeezing the spray shield material at the overlaps. If the shield is oil soaked it will be evident by the oozing of oil from the cloth. Oil pooled within the spray shield enclosure is identified by feeling inside at the base of the enclosure with a finger and determining if the liquid contained is fuel oil, lube oil, or entrapped condensation. Discoloration of the spray shield can also provide a visual aid of shields that require a closer inspection.

Improper flange shield installation also constitutes a number of the material discrepancies we find in spaces. Flange shields should be installed to cover the perimeter of the flanged joint with an overlap sufficient to achieve complete enclosure. The side overlap will extend down to cover the bolts and nuts of the bolt circles on either side of the joint. This may or may not bring the shield into contact with the pipe. In cases where joints are butted against machinery, such as lube oil piping flanges mounted on reduction gear casings, tightly secure the shield to the flange by fitting a metal band or hose clamp arrangement around the shield, and over the perimeter of the flanged joint.

Shields do not require painting; in fact this should be avoided. However, do not replace shields that have already been painted on that basis alone.

For main and auxiliary machinery spaces, flange shields should be on all flanged joints (including simplex strainer flanged covers) and flanged valve bonnets in piping containing flammable fluid except those listed below. There should be shields around flanged bonnets and other flanged connections in piping systems containing flammable liquids under pressure. This prevents spray onto electrical equipment, such as switchboards, instrument panels and benchboards, electrical controllers, instrumentation cabinets, or other equipment where wetting could result in fire or loss of propulsion.

For areas outside main and auxiliary machinery spaces, provide spray shields for flammable fluid piping flanged joints and flanged valve bonnets located in the direct plane of an

electrical switchboard, electrical equipment enclosure, or a motor. Protection is not required for watertight, spray tight, totally enclosed, submersible, or explosion-proof electrical equipment.

Spray shields are not required for the following:

- Piping not subject to pump discharge pressures; for example, lube oil storage tank gravity fill lines and pump suction piping that cannot be pressurized through a cross-connection with or as part of the operation of another system.
- Piping located in voids or cofferdams.
- Bilge pump discharge piping, except where the pump is part of a tank stripping system.
- Tank sounding tubes, air escapes, vents, and overflows.
- Gauge line piping downstream of a root valve, except for flanged connections.
- Piping located inside gas-turbine modules and gas turbine generator reduction gear enclosures.
- Joint located within metal shielding enclosures for duplex strainers.
- Piping on weather decks.
- Piping below deck/floor plates except on fossil-fueled steam ships.
- Self-shielded flanges (for example, a lip) outside the gasket, where the gasket is positively captured.
- Union and union-type fittings.

Careful review of reference (a) (which is summarized above) and frequent inspection of flammable liquid piping will ensure that you are operating a safe propulsion plant and that valuable time won't be lost changing out flange shields on hard to reach piping surrounded by hot machinery.

DIESEL

MODIFICATIONS TO FUEL OIL SUPPLY SYSTEM FOR MHC-51 CLASS DIESEL ENGINES

By LCDR Bill Wood

Isotta Fraschini (IF) eight cylinder diesel engines located on MHC-51 class ships have had a history of losing fuel pressure for no apparent reason. In most cases this is not a complete loss of pressure: however, EOCC requires the EOOW to Emergency Stop the engine upon the alarm sounding. In many instances the cause is air in the fuel oil system. Blame has been placed on everything from design problems (fuel oil tanks lower than the engines they provide service to), faulty relief valves, to bad "O" rings in the oil/water filters. To correct the problem, PMS303 directed that there be an additional three-way valve installed.

IF engines have a three way valve (1-PFS-E1) that is used to shift fuel oil alignment from the fuel oil service pump (FOSP) to the hand priming pump in the event that work has been done on the fuel oil system and it needs to be primed. A second valve should be scheduled for installation during the next yard period. This second valve (1-PFS-E11) directs fuel from the fuel oil cooler to either the fuel oil tank on suction or the fuel oil supply line downstream of the original three way valve (1-PFS-E1) and, ultimately to the suction side of the FOSP. The valve is to be utilized as follows:

- Prior to engine start, valve 1-PFS-E11 is aligned to return fuel oil to the service tank.
- After engine start when the EOOW determines the engine is ready to "ASSUME POWER", the EOOW will direct the ROVER to align the valve to the FOSP. Thus the FOSP receives fuel from the service tank and the fuel oil cooler.

If you have the second three way valve installed and procedures "CAMDS" and "CASSDG" do not reflect these changes, ensure a 4790-CK has been submitted and send an EOSS feedback report to make these corrections.

On ships where this modification has been completed, we have routinely observed numerous fuel leaks on the new valve due either to loose fittings or the installation of the wrong size "O"-ring. We recommend that frequent

visual inspections be conducted to ensure there is no fuel leakage from valve 1-PFS-E11.

GAS TURBINE

LM 2500 CLEVIS BOLT ORIENTATION

By CAPT Doug MacCrea

Over the past year there have been several messages that have discussed what the proper orientation of the LM2500 Variable Stator Vane (VSV) Actuator clevis bolts should be. These messages may have caused some confusion because the OEM installed the clevis bolts with the head facing the engine and the tech manuals call for the bolt heads to be facing away from the engine.

The OEM (General Electric) has stated that the correct orientation for these bolts is for the bolt head to be facing towards the engine to prevent potential binding of the VSV actuator.

Take a good look at your engines and determine the clevis bolt orientation. Do the bolt heads face towards the engine? If not, submit a DFS and arrange for the bolts to be changed at the first opportunity by an IMA or Gas Turbine Inspector.

LM2500 tech manuals will be updated to reflect the correct orientation of the clevis bolts soon.

DD 963 FUEL OIL SYSTEM COMMON DEFICIENCIES

By LCDR Jared Keys

Some of the more common material deficiencies noted recently on DD 963 fuel oil systems follow. Similar platforms can check their systems for these problems using this as a guide.

- F/O leaks on filter/coalescers at the sight glass isolation valves and at the changeover valve assemblies.
- F/O leaks on filter/coalescers from the tower cover due to a failed O-ring.
- Inoperative filter/coalescer differential pressure gages and excessive differential pressure at high power.
- Improper shifting of the filter/coalescer towers as evidenced by pressurization of the offline tower.
- Numerous oil soaked flange shields.
- Unreliable/inoperative steam regulating valves for the F/O Service Heaters.
- F/O leaks on motor-operated service tank suction and return valves.
- F/O leaks on gravity feed tank sight glasses.

Problem areas encountered when conducting plant evolutions include the inability to successfully:

- Shift duplex F/O strainers.
- Manually shift filter/coalescers.
- Align F/O service heaters.

ETT should place additional focus on these evolutions with watchteams.

DD 963 LOSCA DRAINS MISTING

By LCDR Jared Keys

Recently, we have noticed an increased occurrence of misting coming form the LOSCA and various other oily waste drains. This problem has usually been noted during high power demonstrations however there has been an increase in occurrences at speeds considerably less than 168 SRPM.

The “fix” that was originally installed to correct this problem was to increase the 18-inch loop seal in the Gas Turbine Module drains to a 24-inch loop seal. This was done to overcome the high pressure within the GTM over-pressurizing the drain tanks. Once installed, this change significantly reduced the amount of misting experienced at low SRPM. A problem that has been identified on ships with the proper size loop seal is that the loop is empty. The principle of operation for this loop seal requires that water, or some other fluid, acts as a trap to counteract the over-pressurization within the module. Several ships visited were not aware of this installation or of the location of the loop seals. Unfortunately there is no PMS or EOSS procedure governing the loop seals, so knowledge of their existence and operation

leaves when knowledgeable deckplate sailors transfer.

The increase in the size of the loop seal did not completely correct the problem of misting drains. Some ships with the improved loop seals installed and proper fluid levels maintained within the seals were still experiencing misting at various locations, primarily the LOSCA and Fuel Oil Head Tank drains. AER 18-97 was implemented to correct this problem. This AER separates the LOSCA drains from the Fuel Oil Head Tank drains. The LOSCA drains are redirected to the GT Drain Tanks while the Fuel Oil Head Tank drains have been piped to the Oily Waste Holding Tank. In addition, the Fuel Oil Head Tank overflows were re-routed overboard. Additional loop seals were added to the LOSCA drains and LOSCA Tank vent/overflow pipes to prevent a direct flow of vapors into the drain system. The LOSCA vent/overflow pipes are segregated from the LOSCA drains and routed independently to the Gas Turbine Drain Tanks.

Additional Information and a copy of this AER can be obtained from CHET Norfolk or the SIMA Norfolk Tech Library. You can reach CHET at DSN 564-1999.

STEAM

TURBINE ROTOR POSITION INDICATORS

By LCDR Rick Lawrence

An inoperable or incorrectly set rotor position indicator should be corrected prior to operation of the turbine.

There are two types of Rotor Position Indicators (RPI) on steam turbines. The first is a dial indicator that contacts the turbine shaft end nearest the thrust bearing. Its purpose is to monitor the position of the thrust collar in the thrust bearing and to provide an indication of thrust bearing position and condition. The second is the differential expansion indicator that is mounted at the rotor end away from the thrust bearing. It is normally a dial indicator or a pointer-and-scale, and its purpose is to indicate the relative position of the rotor and casing during heating transients or maneuvering conditions. Neither type of RPI directly measures any specific clearance in the turbine, but rather indicates motion relative to a zero setting.

During recent material checks, we have observed that RPIs are inoperative or that watchstanders cannot read or interpret RPI readings.

In addition to low watchstander level of knowledge, the following are other common RPI problems:

- Hot/cold readings not recorded on PMS cards, not logged in the Engineering Log or not included in material history files.
- Min/max RPI readings not posted on the turbine in the vicinity of the RPI and/or watchstanders are not familiar with these readings.
- Out of tolerance RPI readings made without corrective action being taken.
- Inoperative RPIs not noted on the Engineering Department Eight O'clock Reports.

RPI readings should be taken regularly during routine plant operations and following many turbine casualties. When taken after a casualty, they are a quick indication of whether or not a turbine can be safely operated/placed back in operation or should be secured for further troubleshooting.

BURNER FRONT FUEL OIL LEAKAGE

By LT David Allison

Ref: (a) NSTM 221-3.1.8
(b) NSTM 221 table 221-6
(c) OPNAVINST 1500.19C (w/Ch-2) Art C1304

During recent assessments we have found fuel leaks on boiler burner fronts. While the ultimate goal and standard is zero fuel leakage, references (a) and (b) provide specific guidance for the maximum allowable leakage rates for all burner front oil systems. These rates are summarized as follows:

- Safety Shut-Off Device Oil Valve through seat leakage: no constant stream, spray, or atomization; maximum eight ounces per hour (80 drops per minute).
- Safety Shut-Off Device Oil Ball Check: no constant stream, spray, or atomization; maximum leakage 8 ounces per hour (80 drops per minute).

- Fuel Oil Manifold Root Valves (through seat/external packing): zero leakage allowed.

- Safety Shut-Off Device Atomizer with Combination Burner firing or secured (atomizer installed or removed): zero leakage allowed.

Reference (c) provides general safety guidance on this subject and states that: "If a fuel shut down device on any boiler does not function properly, the associated boiler shall not be steamed until the fault has been corrected."

BURNER ATOMIZERS

By LCDR Jim Talbert

Ref: (a) NSTM 221

During recent assessments on steam propulsion plants, we have observed ship's force violating reference (a) concerning the removal of secured atomizers in operating boilers. When questioned, ship's force personnel were unaware of the guidelines provided in reference (a) or the possible damage that was occurring to the atomizers. The following note is provided from reference (a), paragraph 221-4.11.1:

NOTE:

The atomizers of secured burners (both mechanical and steam atomizers) in operating boilers **shall** be removed unless essential for maneuvering situations. Failure to do this with vented plunger atomizers can cause heavy varnishing of the atomizer cartridge and can cause the piston to seize, rendering the cartridge inoperative. With steam atomizers, sprayer plates left in idle boilers have been known to fracture due to thermal shock, even though steam was left on for cooling. Also, the steam, which must be left on for cooling of the idle steam atomizers can cause corrosive condensation in the boiler and waste feedwater.

Review NSTM Chapter 221 and ensure you are training your watchstanders to those standards.

OPERATIONS

MCFED vs. MCSFS

By LCDR Jared Keys

We continue to observe watchstanders who appear to be confused about when to open electrical components to combat class "C" fires. This confusion appears to center around EOCC procedures MCCFS (Class "C" Fire in a Switchboard) and MCFED (Class Charlie Fire in Electrical Distribution System). **While the procedures appear to be similar, they are very different**. Care has been taken to differentiate between switchboards and electrical distribution systems (all other electrical components).

In EOCC Procedure MCCFS, we believe the confusion over opening the switchboard to fight the fire comes from a note in the immediate actions (the location of this note within the immediate actions of MCCFS varies between ship classes but is included for all ships) that states:

> "Fighting of the fire should not be delayed if alternate power sources cannot be isolated at the affected switchboard by the Repair Electrician."

When combating a Class "C" fire in a switchboard, the immediate actions of EOCC procedure MCCFS are very specific. Under no circumstances will the switchboard be opened to combat the fire or investigate the switchboard until after it has been tagged out, a deranged equipment checklist completed, and the approval of the Commanding Officer obtained.

EOCC Procedure MCFED differs from MCCFS in that it allows the Repair Electrician/Man-in-Charge of the Scene to open the electrical component if he/she feels the fire is spreading or is out of control. The following notes from MCFED apply:

> "Firefighting should not be delayed awaiting isolation if the man-in-charge at the scene deems it necessary to prevent further spread or damage."

and:

> "Repair Electrician/man-in-charge at scene will authorize the opening or removal of panel cover, if necessary to fight the fire. Inform space supervisor and EOOW of

decision to do so. (Commanding Officer's permission is not required as extinguishing the fire to minimize further damage is paramount."

Compare the notes and warnings of MCCFS and MCFED. Make sure all your watchstanders and Repair Electricians thoroughly understand them.

Do not open a switchboard in a Class "C" fire until it has been tagged out, the deranged equipment checklist completed and the CO's approval obtained.

Open an electrical component (all other electrical components except switchboards) to combat a Class "C" fire only if the Repair Electrician/Man-in-charge determines that the fire is spreading or cannot be put out without opening the component.

DAMAGE CONTROL/ FIREFIGHTING

FIREFIGHTING MATERIAL ISSUES

By LCDR Jim Gompper
LCDR Del Bena

Ref: (a) NAVSEA WASHINGTON DC 010320Z JUL96
(b) COMNAVSURFLANT NORFOLK VA 171915Z SEP99
(c) COMNAVSURFLANT NORFOLK VA 17846Z SEP 99

Basic damage control material readiness problems have become more evident during recent assessments. Representative examples include:

- PKP bottles that are improperly filled, badly corroded, or have not had applicable PMS completed. PKP bottles must be filled according to the specific instructions contained on the PMS card. The PKP level varies according to the size and manufacturer of the particular bottle. MIP 6641 MRC A-18R applies to ANSUL 28/27 lb extinguishers while MRC A-5R applies to LeHavot 27 lb extinguishers. Which type PKP bottles do you have and are they being maintained properly?
- AFFF in-space hose reel cutout valves aligned improperly (see reference (a) for specific details). In general, 1/4 turn ball valves should be installed with the latching devices removed. These valves should not be classified and may be left either open or closed according to the ship's written policy. Gate or globe valves in this application should be classified "W" and be left open.
- SEEDs only work when they are filled! Check SEEDs periodically to ensure they are fully charged and functional. Make sure you keep a few extra SEEDs on hand to replace those found defective and those used during drills. Per reference (b), OCENCO EEBDs do NOT replace SEEDs! SEEDs are required for engineering space watchstanders.
- Check basic safety items such as deck plate screws and ladder pins. An increasing number of ships have gotten out of the habit of routinely checking egress routes for safety.
- Check your AFFF Portable Fire Extinguishers. Reference (c) states that approximately 400 bottles have been sold to distributors (and subsequently to the Navy) that do not have a Schrader Air Valve installed. This air valve is used to charge the bottle to proper pressure. An illustration of the proper configuration can be found in NSTM 555 Figure 4-4.

A good, thorough pre-drill or pre-evolution safety walk through is key to identifying all of these problems and more. A well-informed and aggressive ETT and DCTT are the first lines of defense against damage control discrepancies.

EEBD UPDATE

By DCCS(SW) Jerry Coleman
COMNAVSURFLANT (N814)

EDITOR'S NOTE: *Scott EEBD's are getting old! 16 years from manufacture is the shelf-life date. Observations during recent assessments indicate that many EEBD's have exceeded their shelf life. The following article addresses the actions being taken to resolve the EEBD problems in the fleet. Thanks for the update Senior Chief!*

Scott EEBDs are being replaced by the new OCENCO M-20.2 EEBD. Although they perform the same function, they are two different pieces of equipment. Funding for the OCENCO EEBD is being provided to CNSL through CLF based upon the number of EEBDs that have been reported to have exceeded their shelf life by fiscal year.

Due to the vast differences between the Scott and OCENCO models, CNSL has decided that ship-wide change-outs need to be conducted. Therefore, as ships receive the new OCENCO EEBD, Scott EEBDs that have 18 months or greater shelf life remaining are being redistributed to ships that have EEBD shortfalls. Currently, 25 SURFLANT ships have been outfitted with the new OCENCO M-20.2 EEBD. Funding is in place to outfit approximately 35 ships in FY 00 and 25 ships in FY 01. In order to facilitate the change-out effectively, commands need to ensure that accurate EEBD inventories are sent to COMNAVSURFLANT (COMNAVSURFLANT NORFOLK VA 171915Z SEP 99 refers). This information is being used to determine outfitting priorities.

Upon change-out to the OCENCO EEBD, Scott EEBDs with more than 18 months of shelf-life remaining are being shipped to the Non-Developmental Item Warehouse in Norfolk for re-distribution. EEBDs with less than 18 months of shelf life remaining at change-out are to be handled by the ISIC at their discretion. EEBDs with expired shelf life (16 years) are to be turned into the ship's HAZMAT Coordinator for proper disposal.

A DC Advisory will be issued to address actions to be taken for significant shortfalls in your EEBD inventories. Any questions about EEBD change-out should be addressed to the CNSL POC, DCCS(SW) Coleman at DSN 836-3095.

Remember, the OCENCO Model M-20.0 EEBD is a replacement for the Scott EEBD. The use of SEEDs is still required in propulsion plants.

For additional information on the OCENCO Model M-20.2 EEBD see COMNAVSURFLANT Norfolk VA 212210Z OCT 99

Damage Control

Damage Control Remotely Operated Valves

By LCDR Del Bena

Ref: (a) EOP MMF
(b) GENSPECS Section 529 para J

During recent assessments we have observed an increasing number of ships that have been unable to remotely dewater one or all of their main spaces due to inoperative remote operators in the main drainage system. In some cases, these ships were also unable to dewater a main space locally with the installed eductor. This is a serious and significant damage control discrepancy that should be corrected immediately.

In accordance with reference (a), the main space drainage system must be aligned to dewater a space when necessary, including remote operation. Reference (b) specifically states that educators shall be controlled by mechanical remote control from a space readily accessible above or adjacent to the compartment. In addition, the largest main drain suction valve of one bilge well in each main and auxiliary machinery space shall be operable manually at the valve and remotely from the damage control deck.

During assessments if a main space cannot be dewatered remotely by an installed eductor in the main drainage system, the space, as well as the remote operator, should be considered in Repair Before Operate (RBO) status effectively preventing drills from being conducted in that space. To provide an example (DD 963 Class), if the AMR 1 eductor is not remotely operable, to prevent the space from being placed in an RBO status, the bulkhead cutout could be opened remotely and MER 1's eductor used to dewater AMR 1. Of course, the remote operator needs to work on that eductor and bulkhead cutout.

The bottom-line is that ships must be able to dewater their main spaces remotely with their installed eductors. The time to find out that your installed educators and remote operators do not work is not during a casualty!

REACH OUT AND TOUCH US

We've moved to the second deck of CEP 86 on the Naval Base (across from the 'DESRON Headquarters Building') as part of our integration with ATGLANT, and have new office codes. To reach us, dial our switchboard, (757) 445-4845 (DSN prefix 565) and then the extension of the individual you would like to reach (or spell by last name). For general questions and scheduling, call LCDR Minta at extension 131. If you'd prefer to e-mail us, send your mail to: username@atgl.spear.navy.mil, where the usernames follow. In the near future, our web-site will have this information and more.

CODE	NAME	e-mail	EXT
DIRECTOR, DEPUTY, and SCHEDULER			
N43	CAPT TJEPKEMA	TjepkemaRP	103
N43A	LCDR MINTA	MintaJL	131
N43B	CAPT MILLER	MillerJR	132
	FAX		445-5401
STEAM BRANCH			
N431	CAPT BOGDANOWICZ	BogdanowiczRA	182
N4311	LCDR LAWRENCE	LawrenceRT	144
N4313	LCDR TALBERT	TalbertJS	171
N4314	LCDR RADICE	RadiceRA	176
DIESEL BRANCH			
N431	CAPT BOGDANOWICZ	BogdanowiczRA	182
N4321	LCDR WOOD	WoodWP	133
N4322	LT ALLISON	AllisonDR	145
N4324	LCDR BELL	BellJE	146
GAS TURBINE BRANCH			
N433	CAPT MACCREA	MaccreaDG	128
N4331	LCDR KEYS	KeysJA	143
N4332	LCDR WEBER	WeberTR	147
N4333	LCDR MURRAY	MurraySH	142
N4334	LCDR BENA	BenaBD	169
N4335	LCDR ALLEN	AllenWB	170
N4336	LCDR MINTA	MintaJL	131